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ABSTRACT

Stressing that teachers must consider not only the quality and amount of content in their questions, but must also consider the levels and types of questions being asked, as well as design appropriate modeling, cueing, and responding strategies, this document outlines current research on questioning techniques for classroom use. The role of questions in education is addressed first, with emphasis on their role in helping students learn to independently ask their own questions. Next, the document examines levels of questions, ranging from those which seek the lowest level of information (knowledge questions) to the highest (evaluation questions), and provides examples of each level, noting that research shows the level of student responses is directly related to the level of the teacher's questions. Then the paper focuses on types of questions teachers tend to ask, and reveals that of the most common nine types of questions teachers model for students, students respond with only two types--clarification and monitoring questions. How to model questions successfully for students is explained next, followed by a discussion of teaching students to read and listen for question cues in texts, and hints for appropriately responding to student questions. The final part of the document deals with waiting for answers, and recommends that teachers consciously wait at least ten seconds for student response. An appendix provides examples of teacher-specific types of questions. (SKC)

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QUESTIONING TECHNIQUES FOR TEACHERS: TEACHING READING, THINKING, AND LISTENING SKILLS

Kelly A. Hoxmeier, Ph.D.

Any discussion of questioning should open with a question, so let us begin with "How many questions are asked nationwide during one fifty-minute class period?" While the answer must be an exorbitant number, more staggering is the reality that few of the teachers questioning were taught appropriate questioning strategies and almost no students are asking the questions.

Even given the fact that since the turn of the century we have had research indications on the importance of questioning in the classroom validating statements by Socrates, surprisingly few education methods books mention questioning. We teachers need to roll up our pedagogical shirt sleeves and get to the business of learning how to effectively teach reading, thinking, and listening skills by the knowledgeable use of questioning.

What do we know about questioning? Hunkins points out, "The question is perhaps the primary tool by which the individual processes information regardless of the diversity of his procedures."[1] Further, Marksberry saw that questions:

1. Build inquiry and discovery skills
2. Arouse student interest and participation in self-directed learning
3. Build thinking skills
4. Increase perception and ability to think on discursive and non-discursive levels
5. Produce knowledge in response to questions.[2]

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Certainly, we can look at these research conclusions and volumes of others like them and begin to understand the importance of questioning in classrooms, yet we still ask "What is the role of questions in the learning process?" Singer succinctly explains to us, "The objective of teaching comprehension is to have students learn to ask their own questions and guide their own thinking so that they can become independent in the process of reading and learning from text."[3] Cazden, also writing about the role of questions in education sees a twofold role:

> (a) attempts to teach children to ask more productive questions, and
>
> (b) attempts to change what happens in classrooms so that more of the children's learning will be based on questions which they themselves ask rather than on questions which are asked by the teacher.[4]

The concensus in the research literature indicates that judicial use of teacher questions and teaching children to question (1) allow the students to see appropriate modeling of how to question (and answer), (2) allow the students to practice questioning and answering with guidance and encouragement, and (3) allow the students to interact with information, not simply receive information.

Since we know that active involvement with information fosters more real learning, as teachers we should next ask, "What do we need to know in order to be good questioning models?" The effective questioner is aware of the level and type of the questions constructed, as well as how to model, cue, accept student questions, and wait for answers.

Questions--Levels

There are almost as many taxonomies of information/ comprehension levels as there are opinions on the relative worth of any political decision. The most useful taxonomy, however, is still Benjamin Bloom's Taxonomy of Educational Objectives (Cognitive):

1.00 Knowledge
2.00 Comprehension
3.00 Application
4.00 Analysis
5.00 Synthesis
6.00 Evaluation[5]

Arranged in order of lowest level of information to highest order of information manipulation, these categories provide the bases for all questions. There all all kinds of arguments for and against using higher or lower level questions. The major objective should be, however, to give all students an exposure to all levels of questions. The teacher can question on any of these levels with any age of student; Only the complexity of question design and student response changes because of the developmental stage of the student. For example, After reading a Robert Frost poem to my first grader, I can ask "What kind of a picture can you draw about this poem?" or I can ask my college students, "What kind of a picture can you draw about history?" Both questions are at the Comprehension (translation) level on the taxonomy. Further examples of questions written to correspond to the objective level are as follow:

1. KNOWLEDGE

Objective: The student will be able to say the alphabet in correct order.

Question: Can you say the alphabet in order?

2. COMPREHENSION

Objective: The student will be able to recognize basic shapes so that when given various paper shapes he will identify a circle, a square, and a triangle.

Question: Can you tell me which is the triangle?

3. APPLICATION

Objective: The student will be able to compute the area of a given surface.

Question: How much fertilizer would we need to buy to cover the front lawn which is 40 feet wide and 150 feet long? The fertilizer bag says that one pound covers 50 square feet.

4. ANALYSIS

Objective: The student will be able to recognize bias in written communication.

Question: Can you tell me whether you find examples of bias in _____? (Use a magazine article or book chapter What is the bias? How did you identify it?

5. SYNTHESIS

Objective: The student will be able to construct his/her philosophy of teaching based on readings in educational principles and theories.

Question: What is your educational philosophy?

6. EVALUATION

Objective: (See synthesis)

Question: Discuss your rationale for selecting and including certain principles and theories in your philosophy.

Many studies indicate that the level of the student responses is directly related to the level of the teacher's questions. In one study by Cole and Williams, in-class questioning was observed in grades two through six. Considerable correlation was found between the cognitive level, length and syntax of the student responses and the teacher's questions.[6] Unfortunately, Gall found in his review of teachers' questioning practices that teachers tend to use predominantly the literal level:

Studies of Teachers' Questioning Practices

1. Stevens (1912): two-thirds of high school teachers' questions required only direct recall
2. Haynes (1935): Seventy-seven percent questions in sixth-grade history were factual; seventeen percent required thinking
3. Corey (1940): Seventy-one percent questions in high school classes are factual; twenty-nine percent thoughtful
4. Floyd (1960): Forty elementary "best" teachers used factual questions forty-two percent of the time (Guzak, 1967 and Schreiber, 1967 found the same.)
5. Davis and Tinsley (1967): Of questions asked in the classrooms of gifted high school students, more than fifty percent were factual.[7]

We must break this historical clinging to the lowest level of information processing as we design more creative questions.

Questions--Types

What are the different types (functions) of questions? This factor focuses not on level, but on the purposes for the questions. In a recent study of questioning in college classrooms, I found:

1. Each faculty member has his/her own repretory of questioning types dictated by style, and, perhaps, prior experience.

2. Faculty members are generally not aware of the many types of questions they use, nor of the unspoken messages within those questions.

3. Students spend an inordinate amount of time trying to figure out each faculty member's type(and purpose) of questions.[8]

Some of the types of questions and their purposes identified in the study are:

Information processing: to model how to use inductive logic to think about basic concepts within the specific discipline.

Attention: to induce active mental processing in class.

Reactive: to induce active participation (often physical) which leads the student to more concentrated thought about the subject being discussed.

Rhetorical: to identify a new unit of thought or to draw a conclusion.

Monitoring: to check student understanding.

Review: to repeat and organize the most important parts of a specific section of material

Serial: to pose several questions in logical order to facilitate information processing

Examination: to determine how much learning transpired.[9]

Examples of these types of questions are given in Appendix A.

Keeping in mind the fact that teachers are modeling the questions, it is interesting to note that I observed students generally asking only these types of questions:

Clarification: to receive further information about facts or concepts just presented.

Monitoring: to check student understanding of information presented, as well as administrative detail.[10]

Why the discrepancy between the number of types of teacher questions and student questions? Simply, the teachers did not

spend any time teaching the students how to question by drawing attention to the questioning process. Teachers are too interested in spreading Content. In fact, in one class, the instructor asked 115 questions in 45 minutes, and one student who was interviewed immediately after the class didn't think the teacher asked many questions. We need to explain to students why we are using certain questions and teach students to question within our discipline, too.

Questions--Models

How does one model questioning (and answering)? The best system to use is the Singer Phase-In, Phase-Out Model which is as appropriate for elementary classes as for graduate seminars. Learning can be facilitated, according to Singer, by (a) modeling of teacher-posed questions, (b) utilizing a phase-out/phase-in strategy where teachers model questions then students gradually formulate their own questions, and (c) designing active comprehension whereby the teacher

1. Asks students a question that gets a question.
2. Asks students to ask the group questions.
3. Asks students to ask their own questions.[11]

Questions--Cues

We can also teach students to read and listen for question cues by using the Pearson and Johnson Taxonomy for comprehension. Simply stated, the taxonomic categories are

Text Explicit: Literal level. The fact answers are in the book

Text Implicit: Interpretive level. The answers are in the book, but the reader must draw conclusions.

Script Implicit: Inferential level. The answers are not in the book. The student must use inferences to put various pieces together.[12]

An adaptation appropriate for the elementary student was made by Raphael who changed the terminology but not the concept in general. The younger students are taught to ask and look for answers to questions:

> Right There = Text Explicit
>
> Think and Search = Text Implicit
>
> On My Own = Script Implicit.[13]

Questions--Accepting Student Questions

Once we have given some preparatory work to designing the level and types of our questions, modeling appropriate questioning and responding, we must give students the opportunity to question. Unfortunately, Gall reports

> High frequencies of question use by teachers were also found in recent investigations: ten primary grade teachers asked an average of 348 questions each school day (Floyd, 1960); twelve elementary school teachers asked an average of 180 questions in a science lesson (Moyer, 1965); and fourteen fifth-grade teachers asked an average of sixty-four questions each in thirty-minute social studies lesson (Schreiber, 1967).[14]

Teachers are veritable question factories. In fact, Dillon points out that our classrooms often become centers of grand inquisition.[15] The students are so busy fielding questions, they don't have time to develop questions on their own, think of extended answers, or think about the questioning process.

Questions--Waiting for Answers

Rowe's "Pausing Phenomena: Influences on the Quality of Instruction," presents results of seven years of work analyzing wait-time in over 300 classrooms. Rowe reports:

1. Mean pause between the end of teacher's question and when a student had to begin a response is one second.

2. After a student response, the teacher reacts or asks another question within 0.9 seconds

3. Reward frequency is based on identification of better and poorer students.
   a. Poorer students received more overt praise for correct and incorrect responses.
   b. Better students are rewarded only for correct responses.

4. Positive student outcomes occur if a mean wait-time of three to five seconds is used

5. Positive teacher outcomes occur if mean wait-time is increased.[16]

In a study on wait-time in an accounting classroom, I also found the stifling effect of a low wait-time; significant increases in student answers and student questions (higher level and more varied type) were noted when wait-time increased to ten seconds.[17]

In conclusion, teachers must consider not only the quality and amount of content, but they must consider the levels and types of questions being asked, as well as design appropriate modeling, cueing, and responding strategies. Teachers must learn to wait for student answers and questions. If we can learn to juggle all of these skills simultaneously, then we will help our students to read, think, and listen.

APPENDIX A

EXAMPLES OF TEACHER-SPECIFIC TYPES OF QUESTIONS

EXAMPLES OF TEACHER-SPECIFIC
TYPES OF QUESTIONS

1. Information-Processing

Definition: to give basic information and to model how to think in this discipline using fact, links, probes (p.178)

Example:

The teacher wrote BDOL on the board.

T: Which means what? Biological division of labor.

S: Each part has a function

T: What are some of the parts of a society?

S: Blue collar-white collar

T: What else do we have out there in the societal division of labor?

S: Churches.

T: Yeah, religious institutions. What else?

S: Family.

The dialogue continues as the teacher draws a circle on the blackboard and fills in the pie-shaped slots with the student's answers. As the pie becomes filled in, the teacher points to it and says,

T: That sounds reasonable enough, doesn't it? Let's look at the functionalist pie. Are they all good things? Aren't there a lot of things out there which aren't good?

The teacher and students list various things in society which aren't good.

T: If I say why are there schools, how would the functionalist answer?

S: They serve a function and contribute to the survival of the society.

T: Good. What if I said "crime"?

S: It contributes to the survival of the society.

T: OK, that would be the same answer, right? What about the logic of this approach?

(pp.90-91)

2. Attention

Definition: Questions to induce active mental processing (p.178)

Example: (In a discussion about feral children"

T: "Haven't you ever been told when you were a kid, 'for Christ's sake act like a human being'?" (p. 95)

3. Reactive

Definition: Questions to induce active participation which leads the students to greater concentration (p. 178)

Example: "The opposite of ethnocentrism is_____." in a chorus, the students supplied the answer (p.97)

4. Rhetorical

Definition: Questions to identify a new unit of thought or a conclusion. No answer is expected. (p.178)

Example: "T. But aren't there some things out there that perhaps do not make any contributions to society? What I'm saying is, isn't the order perspective wrong?" (p.101)

5. Monitoring

Definition: Questions to check students' understanding (p.179)

Example: "How are we doing?" "Anything else you need to know?" "Do you have any questions about this?" (p.

6. Review

Definition: Questions to repeat and organize the most important information (p.179)

Example: "What do we know about this perspective so far?"(p.103) (After three sessions on symbolic interactionism)

7. Serial

Definition: Several questions posed in logical order with no answers until after the last question (p.179)

Example: "Does that suggest that the way in which we punish crime is a social appendix; it does not make any contribution? If we quit doing it, would it make any difference?" (p.105)

Source: Kelly A. Hoxmeier, An Ethnographic Study of Questioning in College Classrooms, (Unpublished doctoral dissertation, The University of Iowa, 1984).

ENDNOTES

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